REMARKS

Claims 1 and 6 have been amended and new Claim 8 has been added. Claims 1-8 remain pending in this application.

I. **Rejection of Claims 1-6 under Section 103(a)**

Claims 1-6 stand rejected under Section 103 as being unpatentable over Thomson in view of Jansky.

The office action states that Thompson teaches a fuel filler pipe cap detection system that includes a pressure sensor to detect when the cap is not completely and fully seated to represent a safe condition. Thompson is completely devoid of a teaching of a magnetic switch in any form.

Jansky is cited for the teaching of magnetic switch and magnet to trigger a magnetic valve to indicate when the cap is not present. In support, the office action cited Col. 7, lines 27-35, which states:

> A magnetic switch (REED switch) 23 disposed on the spring housing 17 to operate a magnetic part (not shown) of a compensator. A release device, consisting of a permanent magnet 22, is mounted on the bracket 16. By opening or closing the filler cap 9, the permanent magnet 22 reaches the vicinity of the magnetic switch 23 or is removed from this, so that the contacts of the magnetic switch open or close. This can be utilized in a known manner for triggering a magnetic valve.

Jansky employs a simple electromagnetic reed switch to indicate when a fuel cap is or is not present. As is well known in the reed switch art, when the permanent magnet is close enough to the reed switch, the reed switch will open or close to indicate the close proximity of the magnet and, therefore, the close proximity of the cap. The actuation of the reed switch, in the prior art of Jansky, causes an electrical signal to be created which can then be used by circuit to indicate the condition of the fuel cap.

The Thompson/Jansky combined structure is precisely what is described in the prior art section of the instant application. In paragraphs 0004 to 0010, Applicant

describes in detail exactly why these prior art fuel cap systems, that use magnetic switches alone, are problematic. These magnetic switches are very sensitive to temperature where the magnet because stronger or weaker. For example, under low temperatures, a prior art magnetic switch will typically prematurely operate to falsely indicate that a fuel cap is seated in place when it is, in fact, not.

In fuel caps, it is very important that the cap be rotated enough times to exceed the ratcheting effect of the torque limiter. This happens when a user screws the cap down until it rotates freely because it is tightened down all the way. Due to this user interaction, there is also the possibility that the user does not tighten the cap all the way down. Also, the location of the magnetic relative to the reed switch can vary greatly due to the action of the torque limiter. Thus, the inability to control the location of the magnet relative to the reed switch makes accurate detection of a true tightened condition very difficult. As a result, the prior art fuel cap systems can only detect presence of a fuel cap nearby not whether that fuel cap is actually tightened down to a safe condition.

The present invention greatly improves over the prior art fuel cap sensing systems by accurately and reliably sensing a safe tightened condition of a fuel cap rather than whether the fuel cap is near a reed switch. Claims 1 and 6 have been amended to clarify this.

As stated above, it cannot be assumed that detection of a fuel cap near the opening of the filler pipe means that the cap is fully tightened. Thompson and Jansky only teach sensing *location* of the cap. However, this is a gross oversimplification of the operation and structure of the present invention. The key to a tightened condition of a fuel cap is whether the force of the torque limiter has been exceeded which is indicated by the typical clicking sound when screwing in the cap. Only when this happens, is the cap truly and safely tightened.

The present invention uniquely not only detects that the fuel cap is closed but also detects when the force of the torque limiter has been exceeded. When this happens, the magnet moves very abruptly due to the ratcheting. Such abrupt movement causes a corresponding abrupt change in the magnetic field strength of the magnet. The claims specifically require a means for sensing abrupt movement of the magnet relative to the magnetic switch, indicating a closed and tightened fuel cap condition, by sensing an abrupt change in magnetic field strength of the magnet. This is much more than the teaching of a magnetic proximity sensor taught in Thompson and Jansky.

The combination of Thompson and Jansky is completely devoid of a teaching of monitoring the field strength of the magnet. The changing amount of the field strength of the permanent magnet is of no importance to Jansky. All that Jansky is concerned with is whether the permanent magnet is close enough to the reed switch to actuate it and complete a circuit. Such prior art detects proximity of the fuel cap with the assumption that such proximity equates to a tightened condition. As outlined above, one cannot assume that a fuel cap is in a tightened condition just because it is close to the filler pipe. However, in Applicant's invention, an assumption can be made that when the force of the torque limiter has been exceeded, the fuel cap is completely tightened down to a safe condition.

Claims 2-5 depend from now allowable Claim 1. Therefore, Applicant submits that these dependent claims are now also allowable.

Further to the discussion above, the combination of Thompson and Jansky also fail to disclose all of the steps found in Claim 6. The cited prior art fails to teach or suggest sensing abrupt movement of the magnet relative to the magnetic switch, indicating a tightened fuel cap condition, by sensing an abrupt change in magnetic field strength of the magnet. Jansky merely detects closing of the fuel cap not tightening of the fuel cap to a safe condition.

In view of the foregoing, the combination of Thompson and Jansky, assuming they are combinable under Section 103, fail to teach the present invention, as claimed. Therefore, Applicant submits that Claims 1-6 are patentable over the prior art.

II. Allowable Subject Matter

Claim 7 has been indicated as having allowable subject matter therein and would be allowable if rewritten in independent form. The limitations of allowable Claim 7 and its independent Claim 6 have been redrafted as new Claim 8. As a result, Applicant submits that new Claim 8 is allowable over the prior art.

III. Conclusion

Applicant submits that Claims 1-8, as amended, are allowable over the cited prior art. In view of the above, Applicants submit that pending Claims 1-8 are now in condition for allowance. Reconsideration of the rejection is requested. Allowance of Claims 1-8 at an early date is solicited.

If an extension of time is required for timely submission of this response, Applicant hereby petitions for an appropriate extension of time and the Office is authorized to charge Deposit Account 02-0900 for the appropriate additional fees in connection with the filing of this response.

The Examiner is invited to telephone the undersigned should any questions arise.

Respectfully submitted,

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